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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,655	04/30/2001	Raul E. Ayala	GLO 2 0046-3	2722

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EXAMINER

KEANEY, ELIZABETH MARIE

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,655

Applicant(s)

AYALA ET AL.

Examiner

Elizabeth Gemmell

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of the amendment filed 30 May 2003.

The indicated allowability of claims 7-15, 18 and 19 from the previous Office Action (paper number 4) is withdrawn in view of the recognition that Vriens et al. (US Patent 5,813,753; hereinafter Vriens), Ohuchi et al. (US Patent 5,793,061; hereinafter Ohuchi), Jansma (US Patent 5,838,100), and Justel et al. (US Patent 6,084,250; hereinafter Justel) teach the subject matter of new claim 1 and claims 8-15, 18 and 19. Any inconvenience is regretted. Rejections based on the newly cited reference are found below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 8, 12, 13, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Vriens.

Re claims 1 and 2: Vriens discloses, in figure 2 and throughout the disclosure, a light source comprising:

- a light emitting diode (21);
- at least one phosphor material (24);
- at least one UV reflecting material (23);
 - wherein the UV reflecting material reflects at least a substantial portion of UV light emitted by the light emitting component (column 3, lines 40+).

Re claim 3: Vriens discloses that the light emitting diode emits light in at least one of the blue region and the UV region of the electromagnetic spectrum (column 2, line 5).

Re claim 4: Vriens discloses the phosphor being excited by light emitted from the light emitting diode (column 3, lines 20+).

Re claim 5: Vriens discloses the phosphor material able to convert UV light to visible light (column 3, lines 35+).

Re claim 6: Vriens discloses the UV reflecting material reflects UV light into the phosphor material (column 3, lines 40+).

Re claim 8: Vriens discloses a UV reflecting mirror (23). Since a mirror inherently reflects almost 100% of the light impinging on it, one of ordinary skill in the art would recognize that the UV mirror would reflect at least 90% of any UV light not converted to visible light by the phosphor material.

Re claim 12: Vriens discloses, in figure 2 and throughout the disclosure, the UV reflective material (23) disposed as a layer adjacent to the phosphor material (24).

Re claim 13: Vriens discloses, in figure 2 and throughout the disclosure, the UV reflecting material (23) disposed as a layer adjacent a layer of a transparent material (25).

Re claim 16: Vriens discloses a UV reflecting material which reflects light in the range of about 350-400nm (column 3, lines 40+). Since the UV reflecting material reflects the light in the blue/UV range, the respective wavelengths in that range is within the range of 350-400nm. Therefore, it is an inherent property of the UV reflecting material to reflect light in the 350-400nm range.

Re claim 17: Vriens discloses a phosphor material that converts light reflected by the UV reflecting material to visible light (column 3, lines 35+).

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Claim 18 is rejected under 35 U.S.C. 102(e) as being anticipated by Justel.

Justel discloses, in figure 1 and throughout the disclosure, a white light emitting device (column 1, lines 10+) comprising:

- a light emitting diode (column 2, line 63);
- at least one phosphor containing layer (2);
- at least one UV reflecting material containing layer (4);
 - the UV reflecting material containing layer disposed outwardly from the phosphor containing layer; and
- at least one encapsulant layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-11, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vriens in view of Jansma.

Re claims 9-11: Vriens shows all the limitations as shown above.

However, Vriens fails to show the UV reflecting material comprised of about 5-80 wt% of gamma alumina and about 20-95 wt% alpha alumina.

Jansma discloses the use of UV reflecting material comprised of about 5-80 wt% of gamma alumina and about 20-95 wt% alpha alumina within a light discharge device (column 2, lines 45+).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use UV reflecting material comprised of about 5-80 wt% of gamma alumina and about 20-95 wt% alpha alumina as the UV reflecting material in the device disclosed by Vriens because by using a UV reflecting material comprised of about 5-80 wt% of gamma alumina and about 20-95 wt% alpha alumina the UV light is reflected more efficiently and therefore produces higher light intensity of the device.

Re claims 14 and 15: Vriens shows all the limitations as shown above.

However, Vriens fails to disclose UV reflecting material dispersed in a phosphor material containing layer, wherein the concentration of UV reflecting material dispersed throughout the phosphor material containing layer is not greater than about 25% by volume of the phosphor material.

Jansma discloses alumina (the UV reflecting material) dispersed in a phosphor material containing layer in a concentration of at least 20 %wt by volume of the phosphor material, which is included in the range disclosed in the instant claim.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vriens in view of Ohuchi.

Vriens discloses, in figure 2 and throughout the disclosure, a light emitting device comprising:

- an LED (21);
- a phosphor layer (24); and
- a UV reflecting layer.

However, Vriens fails to disclose the LED of the formula $\text{In}_J\text{Ga}_J\text{Al}_K\text{N}$, wherein I,J and K are each greater than or equal to zero, and $I+J+K=1$.

Ohuchi discloses an LED of the formula $\text{Al}_{0.1}\text{Ga}_{0.9}\text{N}$ (where In is equal to zero) (column 2, lines 23+).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an LED of the formula $\text{Al}_{0.1}\text{Ga}_{0.9}\text{N}$ with that of the device disclosed by Vriens because an LED of the formula $\text{Al}_{0.1}\text{Ga}_{0.9}\text{N}$ improves the brightness and intensity of the LED as well as extend the life of the device.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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- US Patent 6,593,596 discloses an LED of the formula $\text{In}_x\text{Ga}_y\text{Al}_z\text{N}$, wherein $x+y+z=1$.
- US Patent 5,813,752 discloses a UV reflection mirror between the substrate and the LED device.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



emg
August 1, 2003



EDWARD J. GLICK
Supervisor
EXAMINER
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